

WHAT IS CLAIMED IS:

1. An optical coupler for coupling light from an optical fiber to a silicon-on-insulator waveguide, comprising:

first and second top planar portions;

a tapered top portion connecting the first and second top planar portions; and

a base portion connecting to the first and second top planar portions with side portions, the intersection of the base portion and one side portion forming a termination point;

wherein the tapered portion has a slope angle such that the light from the optical fiber reflects from the tapered portion and is incident upon the termination point, and the incident angle of the light at the termination point equals a mode angle of the silicon-on-insulator waveguide.

2. An optical coupler as recited in claim 1, wherein the base portion faces the silicon-on-insulator waveguide.

3. An optical coupler as recited in claim 1, wherein the optical coupler produces an evanescent electromagnetic field in a region below the base portion so that light travels through a gap between the base portion and the silicon-on-insulator waveguide and enters the silicon-on-insulator waveguide.

4. An optical coupler as recited in claim 1, wherein the slope angle (α) satisfies the following equation: $\alpha = (90^\circ - \Theta_M)/2$, where Θ_M is the mode angle of the silicon-on-insulator waveguide.

5. An optical coupler as recited in claim 1, wherein the optical coupler comprises silicon.

6. An optoelectronic package, comprising:

an optical fiber;

a silicon-on-insulator waveguide; and

an optical coupler affixed to the optical fiber and the silicon-on-insulator waveguide for coupling light from an optical fiber to a silicon-on-insulator waveguide, the optical coupler comprising: first and second top planar portions; a tapered top portion connecting the first and second top planar portions; and a base portion connecting to the first and second top planar portions with side portions, the intersection of the base portion and one side portion forming a termination point;

wherein the tapered portion has a slope angle such that the light from the optical fiber reflects from the tapered portion and is incident upon the termination point, and the incident angle of the light at the termination point equals a mode angle of the silicon-on-insulator waveguide.

7. An optoelectronic package as recited in claim 6, wherein the base portion faces the silicon-on-insulator waveguide.

8. An optoelectronic package as recited in claim 6, wherein the optical coupler produces an evanescent electromagnetic field in a region below the base portion so that light travels through a gap between the base portion and the silicon-on-insulator waveguide

and enters the silicon-on-insulator waveguide.

9. An optoelectronic package as recited in claim 6, wherein the sloe angle (α) satisfies the following equation: $\alpha = (90^\circ - \Theta_M)/2$, where Θ_M is the mode angle of the silicon-on-insulator waveguide.

10. An optoelectronic package as recited in claim 6, wherein the optical coupler comprises silicon.